

only modified the dosage, and he adds his testimony to the great value of the drug.

This method, should nothing supersede it, will thus become almost as valuable as that of quinine in the treatment of malaria. In Koch's words, "Daraus geht doch aber mit aller Bestimmtheit hervor, dass durch eine geeignete Atoxyl behandlung sehr vielen Schlafkranken, das Leben gerettet werden kann."

(4) *Destruction of tsetse-flies*.—This, so far as we know at present, is not directly practicable, but the flies can be driven away by cutting the jungle. The making of clearings where the natives most frequent, such as at watering places, river fords, and around villages, will certainly be beneficial.

For the present, then, we have at our disposal methods the results of which we shall soon learn. In conclusion, it is, I think, certain that when some of the disputed points indicated above are settled the campaign against the disease will be carried out with greater efficiency because based on more certain knowledge.

J. W. W. S.

WATER VAPOUR IN THE MARTIAN ATMOSPHERE.

ONE of the most telling arguments which has been used against the possibility of the planet Mars being habitable has been that spectroscopists have failed to detect with certainty the presence of water vapour in the planet's atmosphere. It now seems probable that this objection will have to be abandoned, for, in a telegram recently received by Sir Norman Lockyer, Prof. Lowell announces that Mr. Slipher has got on repeated plates—specially prepared for this research—the water vapour bands *a* and near *D* stronger in the spectrum of Mars than in that of the moon at the same altitude.

Should Prof. Lowell's further researches confirm it, this result is one of the most important links in the remarkable chain of evidence for a habitable Mars. The photography of the canals was a great step forward, but the presence of these features was unconvincing unless it could be proved that the water to fill them in their proper seasons was available. Similarly, the seasonal increase and decrease in the dimensions of the snow-caps were thought to be conclusive evidence for the presence of water until the frozen carbon dioxide theory was advanced, although this theory left unexplained the ill-defined edges of the disappearing snowfields. But, so far as our present knowledge goes, it is difficult to see how carbon dioxide is able to produce the intensification of the water-vapour bands in the spectrum of the planet's atmosphere.

For many years, in fact since the actual existence of permanent features on the planet's surface was established, this question of water vapour—of the existence of a substance capable of producing clouds and mists—has been one of the chief points of contention among areographers. So far back as 1863 Sir Norman Lockyer, in a communication to the Royal Astronomical Society (Memoirs, vol. xxxii., p. 179, 1863), describing his observations of Mars during the opposition of 1862, stated that "although the complete fixity of the main features of the planet has been thus placed beyond all doubt, daily—nay, hourly—changes in the detail and in the tones of the different parts of the planet, both light and dark, occur. These changes are, I doubt not, caused by the transit of clouds over the different features." The drawings accompanying the memoir illustrated the changes mentioned, and confirmed the suspicions of cloud effects noticed by Secchi in 1858. But the

assumption that these effects were caused by clouds and mists entailed the assumption of the presence of water vapour in the planet's atmosphere, and the spectroscopic evidence for this has hitherto been too indefinite. Suspected by Huggins and Vogel in 1867 and 1873 respectively, its presence was negated by the subsequent spectroscopic researches of Campbell and Keeler, but now it appears certain, from this latest result from the Lowell Observatory, that water vapour is one of the concomitants of the Martian atmosphere.

In his recent book, "Is Mars Habitable?" reviewed by Dr. Lockyer in NATURE for February 13 (p. 337), Dr. Russel Wallace insisted on the absence of spectroscopic evidence as a strong argument against the presence of water vapour. This objection is now removed, and once more it becomes reasonable to suppose that the Martian surface is, at least to some extent, supplied with that compound which, to terrestrial minds, is one of the essentials of habitability. At the same time, the theories advanced by Prof. Lowell to explain the remarkable variety of appearances and changes from season to season, disclosed by his wonderful observations, have received support worthy of their brilliant conceptions.

WILLIAM E. ROLSTON.

NOTES.

IN an announcement in last week's NATURE it was stated that Prof. Kamerlingh Onnes had succeeded in liquefying helium. It should have been stated that the gas was solidified, no intermediate liquid stage being observed. The demonstration was made in the presence of Prof. H. A. Lorentz and Prof. J. P. Kuenen, both of the University of Leyden. The method adopted is described by the Leyden correspondent of the *Daily Telegraph* (March 10) as follows, and is the same as that used with success by both Sir James Dewar and Prof. Olszewski. The only noteworthy point is the large amount of helium used for the instantaneous expansion. "To make this experiment," Prof. Onnes says, "I placed a tube with thick sides, containing a thinner one for extra protection against external warming influences, in a vessel filled with liquid hydrogen, at -434° F., and in this tube about one and a half gallon of helium was compressed under 100 atmospheres. On allowing expansion to a lower temperature a cloud appeared, which increased as the expansion *in vacuo* continued. Out of the nebulous mass a white flocculent substance gathered in the inner tube, where—although the tube was well closed—it evaporated within twenty seconds. Some solid substance, however, was left, the pressure in the tube meanwhile rising to one atmosphere, and when the valve was opened and the pressure was reduced this substance exhaled almost immediately, no sign of liquefaction being observable. The substance which remained at a temperature of -434° F. was solid helium." We are glad to be able to print the telegraphic message sent to Sir James Dewar by Prof. Onnes on March 5, and Sir James Dewar's reply to it:—Prof. Onnes to Sir James Dewar, Royal Institution, London: "Converted helium into solid. Last evaporating parts show considerable vapour pressures, as if liquid state is jumped over." Sir James Dewar to Prof. Onnes, University, Leyden: "Congratulations. Glad my anticipation of the possibility of the achievement by known methods confirmed. My helium work arrested by ill-health, but hope to continue later on."

THE council of the British Association has nominated Prof. J. J. Thomson, F.R.S., as president of the association for the meeting to be held next year in Winnipeg,

and Prof. Thomson has accepted the invitation to occupy that office.

THE third congress of experimental psychology will be held at Frankfort on April 22-25.

WE deeply regret to announce that Dr. H. C. Sorby, F.R.S., died at Sheffield on Monday, March 9, at eighty-one years of age.

PROF. E. RUTHERFORD, F.R.S., has been awarded the Bressa prize of 9600 lire (384*l.*) by the Turin Academy of Sciences.

PROF. H. POINCARÉ, professor of mathematical astronomy in the University of Paris, has been elected a member of the French Academy.

PROF. W. S. HANDLEY will deliver the Hunterian lecture on "The Natural Cure of Cancer" at the Royal College of Surgeons to-morrow, Friday, March 13, at 5 p.m.

A REUTER message from Melbourne reports the death on March 8, at seventy-seven years of age, of Dr. A. W. Howitt, C.M.G., author of "The Native Tribes of South-East Australia" and other important anthropological works.

A CELEBRATION of the jubilee of the presentation of the Darwin-Wallace joint essay to the Linnean Society on July 1, 1858, will take place on July 1 next; the details are not complete, but it is intended that an afternoon meeting and an evening reception shall take place on the day named, with the award of copies of a special medal, and subsequent publication of the proceedings of the celebration.

THE steamer *Nimrod*, of Lieut. Shackleton's Antarctic expedition, has returned to Christchurch, New Zealand, from the Antarctic. The *Nimrod* is expected to return to the Antarctic next January to fetch the expedition, and she should be back in England some time in the later part of 1909. The *Daily Mail* of March 7 contains a narrative of the expedition, so far as it has gone, by the leader, Lieut. Shackleton.

THE President of the Local Government Board has authorised for the current year the following researches, in addition to those already announced, under the grant voted by Parliament in aid of scientific investigations concerning the causes and processes of disease:—(1) further studies by Drs. Andrewes and Horder as to methods of inhibiting in the animal body the activities of infection by certain cocci; (2) a study of the various forms of pneumonia, especially in children, by Mr. Foulerton; (3) a study of acid-fast bacilli in butter, by Dr. Nabarro; (4) an investigation of the injurious gases evolved during artificial illumination, by Dr. J. Wade.

REUTER'S Agency states that the second International Conference on Sleeping Sickness met on Monday at the Foreign Office. It is understood that the chief business of the conference will be the discussion of a draft general Act dealing with measures for combating the disease which has already been drawn up by the British Government and submitted to the various countries represented at the conference. There is further to be discussed a counter-draft Act prepared by the German Government which contains some slight modification of the British proposals. The complete list of delegates of the seven countries represented at the conference is as follows:—*Germany*: Dr. Robert Koch, Herr H. de Jacobs, Dr. Steudel; *Spain*: the Marquis de Villalobar, Dr. F. Murillo Palacios; *Congo*:

Free State: Colonel Lantonnois, Dr. van Campenhout; *France*: M. Le Myre de Vilers, M. Ronssin, Dr. Kermorgant, Dr. Cureau, Dr. Giard; *Great Britain*: Lord Fitzmaurice, Sir W. Foster, M.P., Mr. A. W. Clarke, Mr. H. J. Read, C.M.G., Sir Patrick Manson, Dr. Rose Bradford, F.R.S., Sir R. Boyce, F.R.S., Colonel D. Bruce, C.B., F.R.S.; *Italy*: Prof. Rocco Santoliquido, Prof. Adolfo Cotta; *Portugal*: Dr. Ayres Kopke. The Lord Mayor will entertain the president and delegates of the conference at luncheon at the Mansion House on Monday next, March 16.

WE regret to read in Tuesday's *Times* that Dr. W. E. Wilson, F.R.S., died on Friday last, March 6, at fifty-six years of age. For many years Dr. Wilson gave disinterested and devoted attachment to research in astronomy and physics, and his work secured for him a high place among scientific investigators. In December, 1870, he was engaged on the total solar eclipse expedition to Oran, and in 1872 he built an astronomical observatory at Daramona, Ireland, and equipped it with a 12-inch reflector by Grubb. Nine years later this was superseded by a more completely equipped observatory containing a fine reflecting telescope of 2 feet aperture, with mounting of the most modern design. In 1891 this was re-mounted and provided with electric control for astronomical photography. With this instrument Dr. Wilson obtained some remarkable photographs of celestial objects, including the moon and many nebulae and stellar clusters. In later years a physical laboratory and mechanical workshop were added to the astronomical observatory, and in the laboratory many important researches on radiant heat and light were carried on by him. Among the subjects of his papers read before various scientific societies are "Experimental Investigations on the Effective Radiation from the Sun." Other important publications of his are entitled "The Absorption of Heat in the Solar Atmosphere," "The Temperature of the Carbons in the Electric Arc," "The Effect of Pressure of the Surrounding Gas on the Temperature of the Crater of the Electric Arc," "The Thermal Radiation from Sun-spots," and "Radiation from a Perfect Radiator." His papers published before the year 1900 were issued separately in a volume entitled "Astronomical and Physical Researches made at Mr. Wilson's Observatory, Daramona, Westmeath," in which appear reproductions of some of his celestial photographs. Dr. Wilson's scientific work was recognised by his election as a Fellow of the Royal Society in 1896, and by the degree of Doctor of Science conferred on him, *honoris causa*, by Dublin University a few years later.

By the untimely death, at the age of sixty-one, of Sir Denzil Ibbetson, India has lost one of her most eminent anthropologists. He joined the Punjab Civil Service in 1870, and his remarkable report on the revision of settlement in the district of Karnal, situated in the south-east of the province, led to his appointment as superintendent of the census of the province in 1881. The report on Karnal was a remarkable achievement. It was based upon a profound knowledge of the peasant classes, their mode of life, social institutions, and religious beliefs. Students of the rural classes in northern India had long been aware that their religion was to be found, not, as the Max Müller school contended, in the sacred books recorded in Sanskrit, a language familiar only to a few Pundits, but in the cults and beliefs connected with the worship of the rural "godlings," as Ibbetson designated them. But the case for this novel view of Indian popular religion was now for the first time clearly advocated in

attractive literary form, and from intimate, personal knowledge. These conclusions were repeated and extended in his census report of 1881, which, in addition to admirable chapters on peasant religion, contained a singularly elaborate account of Hindu and Mussulman castes, tribes, and sects. The weak point of the investigation was that it was purely ethnographical, and ignored the physical characteristics of the people, a subject of which the writer possessed no knowledge. This report, of which the chapters on religion and caste were reprinted in 1883 under the title of "Outlines of Panjab Ethnography," forms an excellent manual of the subject. Additions to the information contained in it have, it is true, been made in the later census reports of Messrs. E. D. Maclagan and H. A. Rose, but the substantial accuracy of Ibbetson's work remains unaffected. His reports suggested and inspired the investigations on similar lines conducted by Sir H. Risley in Bengal, by Mr. W. Crooke in the United Provinces of Agra and Oudh, and by Mr. E. Thurston in Madras. The Punjab Government would be well advised to re-publish, as the best memorial of the late Lieutenant-Governor, the reports on which his reputation as an anthropologist will mainly depend.

A FURTHER contribution to the mass of literature relating to the Mexican cotton-boll weevil is made in Bulletin No. 73 of the Entomological Bureau of the U.S. Department of Agriculture, in which Mr. W. D. Price discusses the numerous parasites preying upon that beetle.

We have received a copy of the forty-first report of the Peabody Museum of American Archaeology and Ethnology at Harvard, in which special attention is directed to an expedition recently sent to South America to procure collections. The expedition, which has been well received by the officials of the various districts visited, has already secured valuable specimens and data.

IN the eighth quarterly report on the scientific work of the Lancashire and Western Sea-Fisheries District, Prof. Herdman announces that, owing to his absence on a visit to the Ceylon pearl-oyster fisheries, the publication of the annual sea-fishes laboratory report will be delayed for a short period beyond the usual date. Plankton will form a considerable item in that report; while of more general interest will be an account, by Mr. J. Pearson, of all that can be ascertained with regard to the life-history and economic value of the edible crab.

BULLETIN No. 50 of the Agricultural Experiment Station at Storrs, Connecticut, is devoted to the rearing of young pigeons—"squabs" as they are locally called—for the market. It is generally supposed that this industry is one which can be profitably undertaken by any person with no previous experience, but this the author—Mr. C. K. Graham—shows to be an altogether mistaken idea. In a properly managed establishment each pair of pigeons ought to produce on an average five pairs of squabs annually; only a few produce more than seven pairs, and in one case where eleven were brought forth none of these were reared to maturity.

THE February issue (vol. ii., No. 4) of the *Journal of Economic Biology* is devoted to the parasitic insects of the Chermes and Coccus groups, Mr. E. R. Burdon discussing the European members of the former genus, while Mr. R. Newstead describes three species belonging to the same family as the latter found on cocoa, rubber, and other plants in western Africa. In the case of Chermes, it is stated that much investigation is still required with

regard to the life-history of the European species, some of which present puzzling problems in connection with their migrations and the "intermediate hosts" they affect during their developmental cycles. The second paper deals mainly with structural details.

To the fiftieth volume, part iii., of the Smithsonian Miscellaneous Contributions, Mr. Bruno Müller contributes a long and elaborate paper on the air-sacs of pigeons, based on an investigation undertaken for the purpose of finally setting at rest the disputed question as to the function of these structures in birds generally. The author refuses to accept any one of the theories hitherto proposed, and comes to the conclusion that the air-sacs, together with the air-cavities in bones, are not to be regarded as organs with any special function, but rather as a system of empty interspaces. "Their value lies in their emptiness, that is, in their containing nothing that offers resistance or has an appreciable weight. Flying is the highest form of locomotion, and as such only possible to a body of high mechanical efficiency. Our most effective machines are by no means compact and solid, but composed of parts as strong as possible in themselves and arranged in the most appropriate manner. The interspaces between the parts are left empty and taken up by air. The Sauropsida, at the time they obtained the power of flight, became adapted to its mechanical requirements, and thereby similar to the efficient machines mentioned above; they divested themselves of all superfluous material, filling the body-space thus obtained with air sacs."

IN No. 29 of the Scientific Memoirs of the Government of India, Captain Christophers, I.M.S., discusses the disease of dogs due to the protozoan parasite *Piroplasma canis*. The symptomatology of the disease, the morphology of the parasite, and its transmission by the tick *R. sanguineus*, are fully described, and the developmental cycle of *P. canis* in the tick detailed. In the tick the parasite becomes a club-shaped body, then a zygote which breaks up into sporoblasts, and these again into sporozoites. A full bibliography of piroplasmosis in general is appended, and the memoir is illustrated with diagrams and two plates. In Memoir No. 30 of the same series, Captain Harvey, I.M.S., and Captain McKendrick, I.M.S., discuss the theory and practice of antirabic immunisation, and conclude that the methods of Höyges and of Ferrans, in which fresh material is used, present certain advantages over those in which dried or heated material is employed for purposes of antirabic immunisation.

THE geographical variation in birds, with especial reference to the effects of climatic humidity, forms the subject of a paper by Mr. C. W. Beebe in the first number of a new serial issued by the New York Zoological Society. Unfortunately, the cover and title-page are lettered *Zoologia*, whereas, as we learn from an erratum-slip, the designation should be *Zoologica*. The serial is published by the society at New York, the first number being dated September 25, 1907. Mr. Beebe attaches great importance to the effects of humidity in producing local phases in particular species, and refers to the well-known fact that while hot, damp situations tend to melanism, dry, sandy localities are equally favourable to the production of light tints. One of the most marked instances of this occurs in the pigeons of the genus *Scardafella* when kept in captivity in a warm, humid atmosphere. In the typical *S. inca* the whole breast is uniformly pale-coloured, but specimens kept in captivity under the above conditions assume after the first moult the characters of *S. i.*

dialeucos, and after the second those of the Brazilian *S. ridgwayi*, which exhibit a progressive degree of dark marking on the breast. Later on the captive birds develop dark markings unparalleled in any wild species. The author then discusses the bearing of these facts on the recognition of geographical races and species of birds, concluding, if we rightly understand his argument, that such recognition need not on this account be abandoned.

It is a matter of considerable interest to botanists that a new edition of the "Botanist's Directory" is being prepared by Mr. I. Dörfner, of Vienna. The last (second) edition was published in 1902, and owing to the changes that take place in six years is much in need of revision. The care bestowed on the work by the publishers, and the general support accorded by botanists in all parts of the world, render the book authentic and remarkably complete.

DR. S. SCHÖNLAND contributes to the Records of the Albany Museum, vol. ii., part ii., the diagnoses of new species of *Aloe*, *Crassula*, *Cotyledon*, and *Kalanchoe* collected in various South African States. The most singular is *Crassula Engleri*, of which all the flowers examined showed stamens only and no female organs, furnishing evidence of dioecism. The same author is responsible for the first part of a list of flowering plants found in the districts of Albany and Bathurst, Cape Colony, that is supplementary to an earlier enumeration in the Records. A new species of *Gasteria* is recorded.

THE physiology and morphology of some Californian hepatics form the subject of a paper contributed by Mr. H. B. Humphreys to the Proceedings of the Washington Academy of Sciences, vol. x. (January). The author describes an endophytic fungus developing sclerotia that was commonly found in the vegetative parts of plants of *Fossombronia longiseta*. Fungi were also found associated with *Aneura multifida*, *Anthoceros Pearsoni*, and *Porella bolanderi*. In all these cases there was every indication that the fungus acted as a parasite. Another feature of interest examined was the development of tubers by the *Fossombronia* and two species of *Anthoceros*; these serve to tide the plants over the dry season. The author also investigated the power of plants and spores to resist desiccation. The use of Knop's solution for germinating spores is noteworthy.

A MONOGRAPH on the stem of the flax plant, prepared by Miss T. Tammes, has been published in the *Natuurkundige Verhandelingen van de hollandsche Maatschappij der Wetenschappen*, vol. vi., part iv. Certain problems connected with flax culture, such as the usual practice of importing seed from Russia, the influence of soil, dimensions of the fibres, &c., are discussed. With regard to the origin of the cultivated plant, the author sees no reason to connect it with *Linum angustifolium*, *Linum humile*, or any other wild species. It was found that the length of the fibres, varying on the average between 25 mm. and 40 mm., is greatest in long and thick stems; a maximum length of 120 mm. is recorded. The fibres increase in length from the base of the stem upwards to within a short distance below the fruit.

THE Carnegie Institution of Washington has issued an elaborate research memoir, covering 144 pages, on high steam-pressures in locomotive service, by Mr. W. F. M. Goss. The results apply to practice involving single-expansion locomotives using saturated steam. The results of the tests show that the higher the pressure the smaller the possible gain resulting from a given increment of

pressure. A simple locomotive using saturated steam will render efficient service when the running pressure is as low as 160 lb. No argument is to be found in the economic performance of the engine which can justify the use of pressures greater than 200 lb.

FIVE palæontological contributions to the geology of Western Australia are contained in Bulletin No. 27 of the Geological Survey of that colony. They comprise notes on plant remains from the Collie coalfield by Mr. R. Etheridge, and on fossils from the same coalfield by Mr. F. Chapman, two reports on fossils from the Irwin River coalfield by Mr. R. Etheridge, and a report on the foraminifera from a calcareous marlstone at Gingin by Mr. W. Howchin. They add considerably to the knowledge of the organic remains of the rocks of Western Australia, and two of the contributions throw light upon the vexed question of the geological age of the Collie River Coal-measures, and are of scientific interest in their relation to the important question of the distribution of *Glossopteris* flora. A re-examination of two leaf fragments, previously thought possibly to belong to the Mesozoic genus *Sagenopteris*, proves them to belong to the Palæozoic genus *Glossopteris*.

THE occurrence of "black rain" in Ireland on October 8-9, 1907, is reported by Dr. O. Boeddicker in *Symons's Meteorological Magazine* for February. On the afternoon of October 8 a dark cloud approached Birr from the S.E., and "black rain" was reported from several places. A letter addressed by Lord Rosse to the *Irish Times* brought a large number of replies, showing that the fall of soot was greater to the S.E. and E. of Birr than to the N.W.; the deposit was considerable in Westmeath, Meath, and Monaghan, and was also traced to the west of Mayo. The evidence seems to show that the cloud originated in South Wales, crossed the Irish Channel and the whole of Ireland, finally disgoring its soot into the Atlantic Ocean.

IN *Ciel et Terre* of January 1, M. J. Vincent gives an account of the unmanned balloon ascent of July 25, 1907, in which the extraordinary altitude of 26,557 metres was reached. The tandem balloons left Uccle (near Brussels) a few minutes before 7h. a.m. (G.M.T.), wind E.N.E., temperature 12°·1 C. The usual inversion was well shown; at 12,112 metres the fall in the thermometer, which read -57°·0 C. (-70°·6 F.), was arrested, and was succeeded by a sudden rise of 6°·7 C. between that height and 13,591 metres. An isothermal zone was then met with, followed by another rise which slowly brought the reading to -42°·2 at about 8h. 6m. a.m., the time when the upper balloon burst. The ventilation of the thermometer was sufficient during the whole of the ascent. The humidity began to decrease rapidly at 1016 metres, where it was 72, at 1690 metres it was 22, and at 6109 metres it had fallen to 9; it decreased but little after that, the lowest reading being 6. At the time of the inversion the wind changed from S.S.W. to W.; then during the slight inversion which followed up to 26½-kilometres two currents were met with, the lower from S.S.E. and the upper from E.; on descending, the S.S.E. current was replaced by a southerly wind.

A THOROUGH examination of the relative merits of the radiomicrometer, the linear thermopile, the radiometer, and the bolometer, for the measurement of radiation, has been made by Mr. W. W. Coblentz, of the United States Bureau of Standards, and is published in the January number of the Bulletin. The conclusion arrived at is that the bolometer is the quickest acting of the four, and should

be used in all cases in which there is much variation of the radiation with time. On the other hand, if the source of radiation is constant, the radiometer is the most sensitive, particularly in the infra-red. The radiomicro-meter, although capable of improvement, is not likely to reach one-fifth the sensitiveness of the bolometer. The Rubens thermopile, when its heat capacity is diminished by the use of thinner wire, is as sensitive as the bolometer, and is to be recommended for the measurement of very weak radiation on account of its greater steadiness.

ACCORDING to the *résumé* of communications made to the Société française de Physique on February 7, Drs. Hemsalech and de Watteville find the flame spectra of metals extend far into the ultra-violet, and are much richer in lines than they have been thought to be. The method used by the authors is a modification of that originally used by M. Gouy. They obtain the finely divided material to be studied, and mix it with the gases proceeding to the burner, by forming an electric arc between two electrodes of the material placed in a bulb through which one of the gases passes. If two such arcs between different metals are used, the spectra of the two metals are superposed. If the gas is filtered between the arc and the flame the lines are scarcely affected, while the continuous spectrum is very much diminished in intensity.

We have received from Messrs. John Wheldon and Co. a catalogue of books and papers offered for sale on microscopical science in all its branches, including an important collection of works on Diatomaceæ.

A CIRCULAR has reached us referring to the issue of publications in connection with the Indian Forest Department. It has been decided that in future the forest literature shall appear in two chief forms, described, respectively, as Indian Forest Records and as Memoirs. In addition to these publications, it is proposed to issue pamphlets and leaflets on professional subjects.

THE Royal Statistical Society has issued a new catalogue, which comprises, with certain exceptions, all works included in the society's library on December 31, 1906. The number of books and separate publications is approximately fifty thousand. The general rules adopted in the compilation of the catalogue are stated with clearness, and statisticians should find the new list a great convenience.

THE Society for Promoting Christian Knowledge proposes to issue the following books on scientific subjects in May next:—"Turbines," by Engineer-Commander A. E. Tompkins, R.N., second edition, enlarged and revised; "Spinning Tops," by Prof. J. Perry, F.R.S., revised edition, with an appendix on the gyrostad and the monorail; "The Fundamental Conceptions of Chemistry," by Prof. S. M. Jørgensen, translated from the latest German edition, with additions by Mr. M. P. Applebey.

OUR ASTRONOMICAL COLUMN.

THE PARALLAX OF THE ANDROMEDA NEBULA.—No. 4, vol. viii., of the *Astronomiska Iakttagelser och Undersökningar å Stockholms Observatorium* is devoted to the results of an investigation of the parallax of the Andromeda nebula. The observations on which the results are based were made in two groups, the first set of fifteen photographs being taken during the period 1902-4, the second,

including forty-seven photographs, covering the season 1904-5. Dr. Karl Bohlin, by whom the investigation has been carried out, describes fully the methods employed, and finds for the parallax of the nebula the definitive value $+0''.171$.

THE ORBIT OF γ VIRGINIS.—A re-investigation of the orbit of γ Virginis has convinced Dr. Doberck that the differences between the calculated and observed positions of that star, when near the periastron passage, are at least partly due to the perturbations to which he recently directed attention. It also seems probable that changes in the shapes of the components, and even explosive action, may exert some influence on the orbit. Dr. Doberck suggests that spectroscopic observations of double stars should prove especially useful in cases where the orbit is very eccentric if made while the companion is close to the principal star. The elements now given show the period of γ Virginis to be 182.30 years, and the eccentricity of the orbit to be 0.88736. The hypothetical parallax is $0''.116$ (*Astronomische Nachrichten*, No. 4235, p. 161, February 29).

THE LARGE SOLAR PROMINENCE OF MAY 21, 1907.—In No. 1, vol. xxvii., of the *Astrophysical Journal* (p. 78, January), Father Fényi compares his visual observations of a large eruptive prominence which he observed at Kalocsa on May 21, 1907, with the photographic observations of the same prominence made by Mr. Fox at the Yerkes Observatory (*NATURE*, p. 90, No. 1987, November 28, 1907). The visual observations give lower altitudes than the photographic, and, on comparing the sketch made at the same time as Mr. Fox's second photograph, it is seen that the forms are so different that no part of them can be identified; on the whole, the sketch more strongly resembles the first photograph made some fifty minutes earlier. The visual observations also show a much quicker ascension of the prominence material than do the simultaneous photographs, the rate being 54 km. per second instead of 30 km.; no change of form was observed visually during the time occupied in observing eleven transits. Father Fényi records that he has never observed the subsidence of a prominence of great height. With prominences of low altitudes the descent of the material is the usual occurrence, but dissipation at great altitudes appears to be the rule for those which attain great heights.

SPANISH OBSERVATIONS OF THE TOTAL SOLAR ECLIPSE OF AUGUST, 1905.—The results of the eclipse observations made at Soria, Spain, in August, 1905, by the members of the eclipse expedition from the Marine Observatory of San Fernando, are embodied in a handsome volume recently published under the direction of Captain Don Tomás de Azcárate, director of the observatory. Numerous photographs of the chromospheric spectrum and of the corona were obtained, and some of them are reproduced in the volume. Nearly five hundred lines were measured in the spectra of the chromosphere, and their wave-lengths are given, together with the probable origins and their wave-lengths as determined by Lockyer, Dyson, Evershed, and other eclipse observers. The volume also contains the results of the meteorological observations made at Soria, and the results of the observations of the contacts, &c., made at San Fernando and many other stations in Spain.

A NEW VARIABLE OF THE U GEMINORUM TYPE.—A telegram from the Kiel Centralstelle announces that the variable star 31.1907 Aurigæ was observed by Prof. Hartwig on March 6 and found to be of the irregular class, similar to U Geminorum; the magnitude was 9.0.

THE CANADIAN ASTRONOMICAL HANDBOOK FOR 1908.—The second annual handbook published by the Royal Astronomical Society of Canada contains a great deal of information useful to amateur astronomers. Ephemerides and charts for the positions of the major planets, lists of interesting coloured, variable, and double stars, and a calendar of astronomical occurrences for the current year are among the many useful data given, whilst there is also a mass of information more especially useful to Canadian observers.